

Implementation of the USFWS Biological Opinion in WY 2011

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Office



“OCAP” Integrated Annual Review
November 8-9, 2011

USFWS OCAP RPA

- Intent: to ensure that CVP/SWP operations do not jeopardize delta smelt or adversely modify its critical habitat
- Five Components
 1. Protection of adults
 2. Protection of larvae and juveniles
 3. Improve rearing habitat
 4. Habitat restoration
 5. Monitoring and reporting

Component 1, Action 1

- Objective: Protection during winter pulse
- Action: limit OMR to -2000 cfs for 14 days
- Timing:
 - Dec 1-20, low entrainment risk period
 - After Dec 20, high entrainment risk period
- Criteria:
 - Turbidity
 - Salvage

Component 1, Action 2

- Objective: tailor protection to conditions following Action 1
- Action: OMR may range from -1250 to -5000 cfs
- Timing: immediately following Action 1
- Criteria: review of
 - Survey data, salvage data
 - Delta conditions
 - Modeling results, if available

Component 2, Action 3

- Objective: minimize larval entrainment and manage Delta hydrodynamics
- Action: net daily OMR flow no more negative than -5000 cfs
 - Low risk, $\text{OMR} \geq -5000$ cfs
 - High risk, $-1250 \geq \text{OMR} \geq -5000$
- Timing: onset of spawning
 - 3-station average temp of 12°C
 - Collection of spent female in salvage or survey

Smelt Working Group

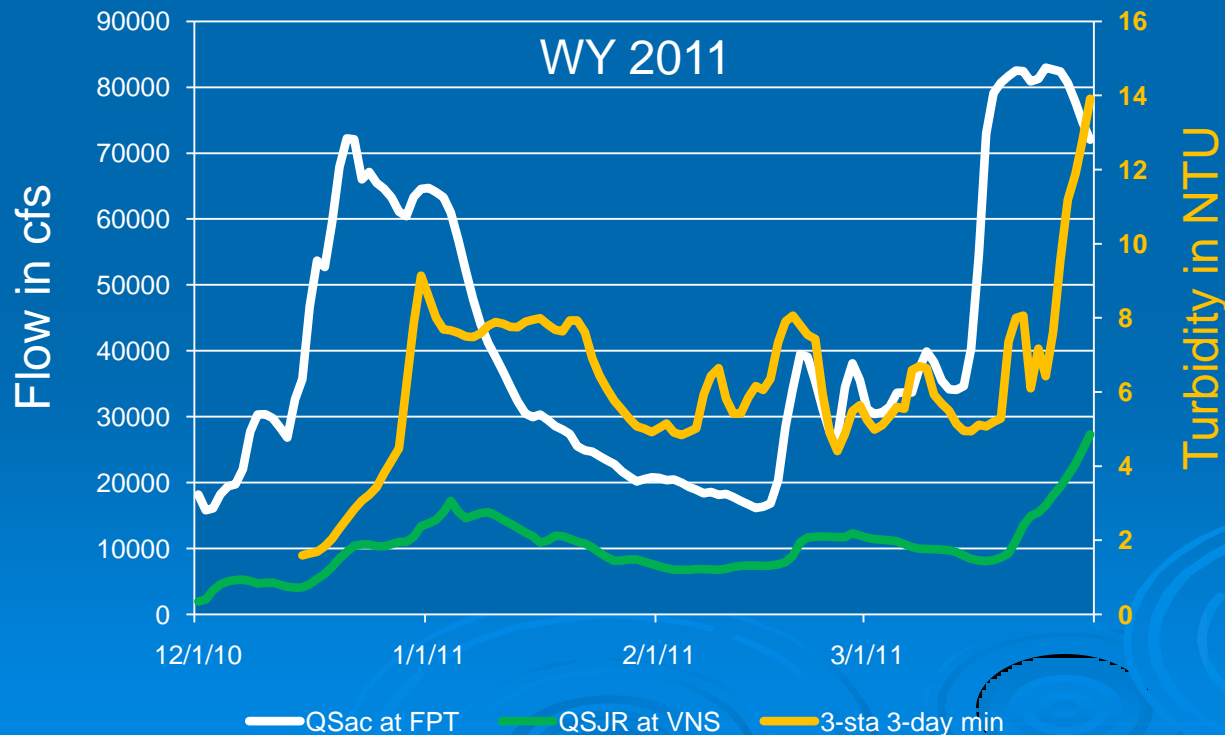
- Made up of agency experts in smelt biology, Delta ecology and project operations
- Low abundance and uncertainties
 - ➡ adaptive approach
- SWG reviews the physical, biological and technical data and provides advice to the Service
- Service makes the final determination

WY 2011 Outcomes

- Incidental take of adults
 - Observed was about 25% of authorized
- Incidental take of Juveniles
 - None
- Critical Habitat
 - PCE2 (water quality) – low Delta turbidity
 - PCE3 (river flow) – favorable for movement
 - PCE4 (salinity) – favorable in spring

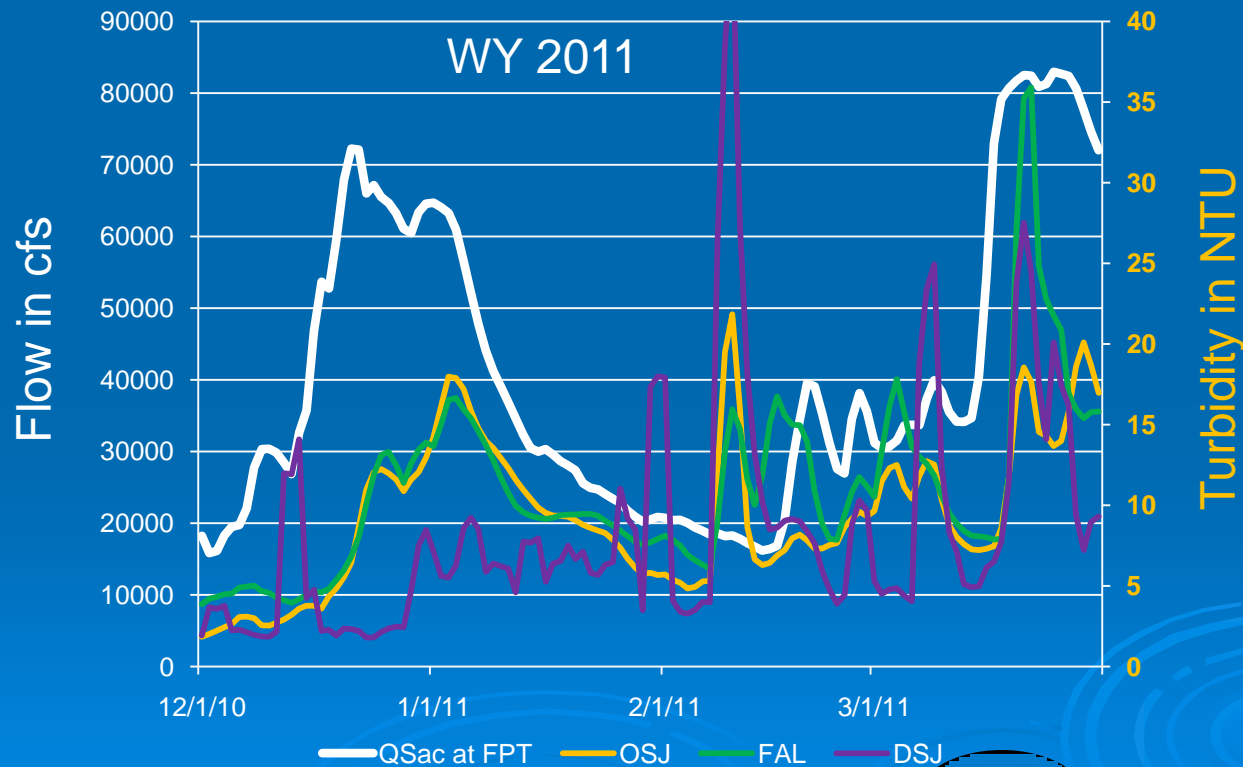
Turbidity Criteria

Turbidity at three RPA criterion stations did not adequately reflect winter pulse flow



Turbidity Criteria

Additional stations monitored



OMR Transition Protocol

- Develop a coordinated protocol for transitions in OMR flow rates
- Must be sufficiently protective of covered species
- Must occur within the SWG/DOSS/WOMT adaptive process framework
- Must allow for compliance to be measured in a way that is consistent and transparent

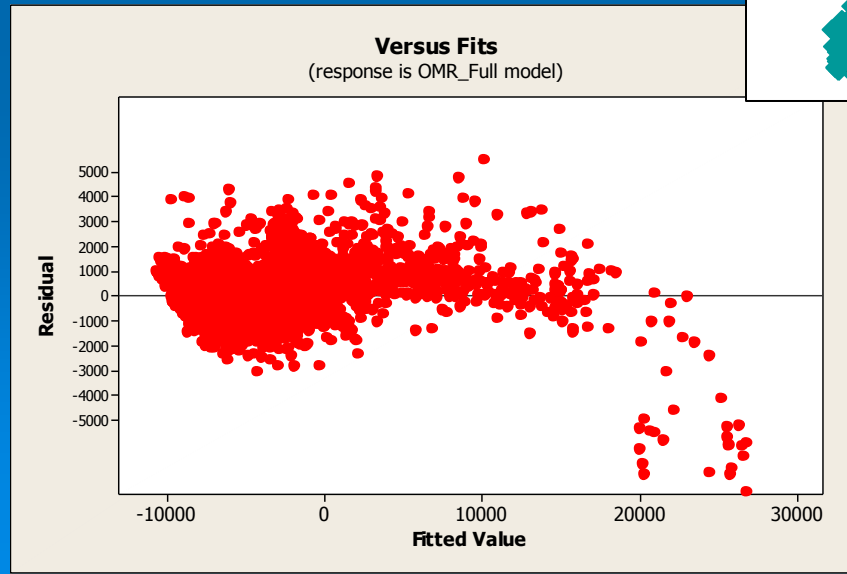
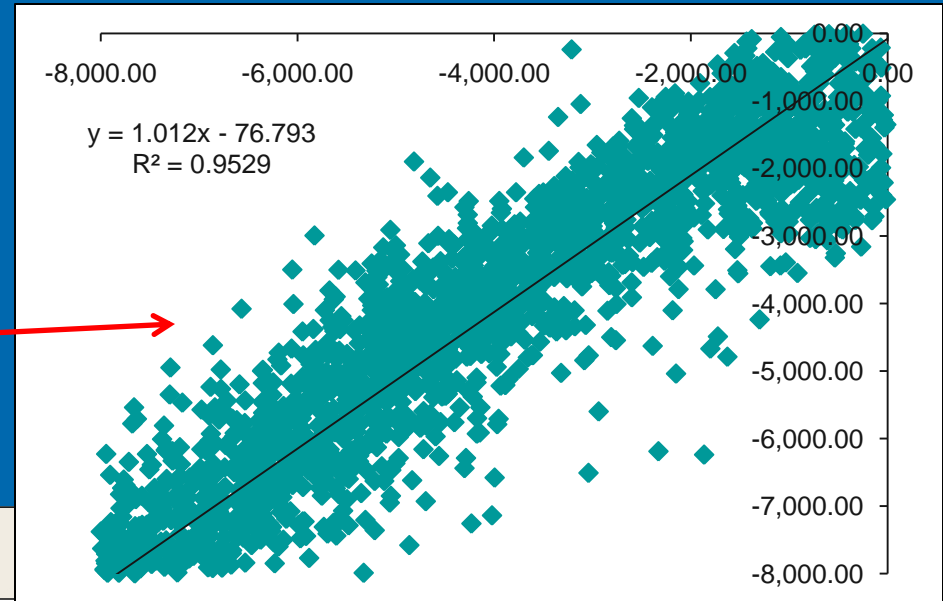
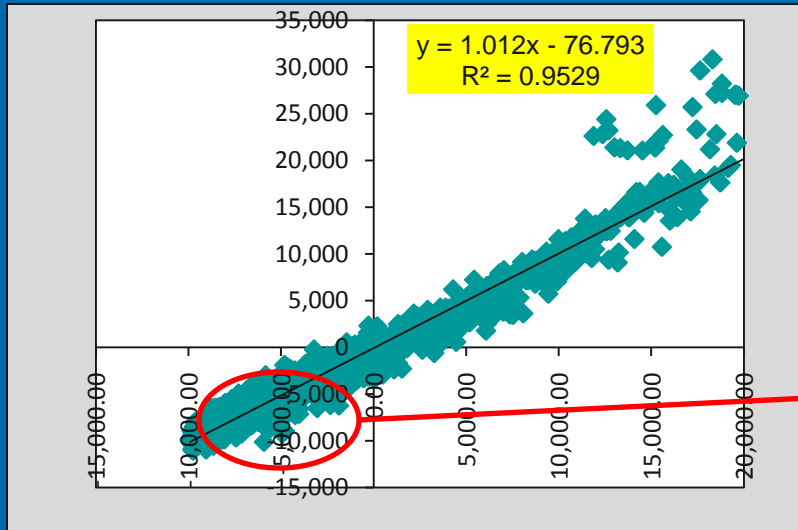
What variables best explain OMR flow?

Model No	Variables	Adjusted R-Sq	AIC
1	SJR	0.734	82,828
2	MOKE	0.618	84,422
3	SWP/CVP, SJR	0.947	75,717
4	SWP/CVP, MOKE	0.874	79,535
5	SWP/CVP, MISC, SJR	0.95	75,445
6	SWP/CVP, CCWD, SJR	0.949	75,494
7	SWP/CVP, CCWD, MISC, SJR	0.952	75,273
8	SWP/CVP, MOKR, MISC, SJR	0.951	75,398
9	SWP/CVP, CCWD, CSMR, MISC, SJR	0.953	75,220
10	SWP/CVP, CCWD, MOKR, MISC, SJR	0.952	75,233
11	MISC, CCWD, CSMR, MOKR, SJR, SWP/CVP	0.953	75,176

OMR Equation (Grimaldo, after Hutton)

$$\text{OMR} = (-0.79 * \text{SWP/CVP}) + (0.54 * \text{SJR}) + (-2.77 * \text{CCWD}) + (-0.10 * \text{CSMR}) + (0.31 * \text{MOKR}) + (0.37 * \text{MISC}) + \text{Con}$$

...but how well does it work?



Questions?

